AMERICAN
BEE JOURNAL

DEVOTED EXCLUSIVELY TO THE INTERESTS OF HONEY PRODUCERS

Publisht Weekly at 118 Michigan Street. *$1.00 a Year—Sample Copy Free.*

37th Year. CHICAGO, ILL., DECEMBER 2, 1897. No. 48.

CONVENTION PROCEEDINGS

Report of the Buffalo Convention of the United States Bee-Keepers' Union.

BY DR. A. B. MASON.

The 28th annual convention of the United States Bee-Keepers' Union was held at Buffalo, N. Y., Aug. 24, 25 and 26, 1897.

By way of preface I would like to apologize to the members of the Union for the delay in furnishing these proceedings for publication.

Before leaving home for the Buffalo convention I had made arrangements for a stenographer to "take down" everything that should be said, so that we might have the most complete report we ever had, but on arriving at Buffalo no stenographer was to be found, altho one had been engaged. Several efforts were made to secure one, but none could be secured without the payment of an exorbitant price, so that no stenographic report was made.

On the arrival of Mr. W. Z. Hutchinson at the convention, I told him of my dilemma, and askt nim to report the proceedings, which, as I understood it, he consented to do, and I made no attempt to keep any track of the proceedings. Owing to the heart-rending afflictions through which he was called to pass at the close of the convention, and his being very busy at the fairs, I received a few days since from him what he had prepared, and of which he says:

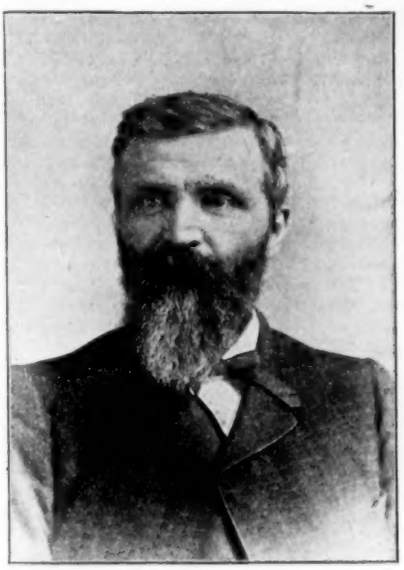
"The notes are not nearly so full as I should have taken if I had been taking them for the Association, for the purpose of publication. I was taking them for my own private use only. I am sorry that a fuller report was not taken of the discussions, but I suppose that this is the best that can be done under the circumstances. I am sorry, too, that I could not have written them out sooner, but the other tasks and burdens in the way prevented."

No one feels the want of a complete report of all the proceedings and discussions more keenly than I do, and as there seems to have been a misunderstanding between Mr. Hutchinson—on whom I relied for a full report—and myself, but little besides the papers read can be publisht.

When the time had come for opening the convention President York had not arrived, the train on which he and Dr. Miller and Mr. E. Whitcomb, of Nebraska, Rev. E. T. Abbott, of Missouri, and others were speeding towards Buffalo, being two hours behind time.

R. F. Holtermann.

W. Z. Hutchinson.



R. L. Taylor.

The convention was called to order in the hall of Canton's Business College, at 10:30 a.m., by the Secretary, and Mr. R. F. Holtermann, editor of the Canadian Bee Journal, was chosen temporary chairman.

It was decided to wait until the arrival of the President and his company before taking up the regular order as on the program, and that the time be occupied in the asking, answering, and discussing questions.

As no record of the discussions was kept, it will avail nothing to give the questions askt, but they were ably discust by O. O. Poppleton, of Florida; W. Couse, R. F. Holtermann, R. McKnight, I. Overholt, and M. B. Holmes, of Ontario; F. Danzenbaker, of the District of Columbia; Dr. H. Besse and Dr. A. B. Mason, of Ohio; and S. A. Niver, C. R. Isham and E. H. Sturtevant, of New York.

During the discussions Pres. York, Dr. Miller, Rev. E. T. Abbott, E. Whitcomb, and others, arrived. After a brief recess, and hand-shaking, Pres. York called the convention to order, and the discussion of questions was continued till adjournment at noon.

FIRST DAY—TUESDAY AFTERNOON SESSION.

The convention was called to order by Pres. York at 1:45 o'clock.

Mr. O. L. Hershisher had a piano placed in the hall, and Dr. Miller was requested by the President to see if he could tell what it was there for, and without answering "I don't know," he at once led off with the "Bee-Keepers' Reunion Song," as printed in the program, and all who could sing seemed to try to see how much they could help the Doctor.

At the conclusion of the singing Mr. R. F. Holtermann, of Ontario, Canada, read the following paper, entitled,

Pure Air, Ventilation, and Artificial Heat in the Wintering of Bees.

During the summer of 1895 I had the good fortune to visit the apiaries and home of one of our foremost and most enterprising Canadian bee-keepers, C. W. Post, of Ontario. Mr. Post exprest great confidence in artificial heat for cellar wintering. He was kind enough to give me his ideas, and the system he thought it would be well to follow, and as a result, a very thorough test was made during the winter of 1895-96, and again during the winter of 1896-97.

I am perfectly well aware that a great many have applied fresh and pure air in the wintering of bees, and with greater or less success. I am also aware that artificial heat has been applied, the instances on record are, however, less frequent, and I do not know of any who for a series of years has made a success of this, nor do I know of anyone who is constantly using artificial heat and fresh air to replace the air made impure by the bees. A combination of these will lead to success. In the application of pure air the great difficulty has been regularity of current, and regularity of temperature. When cold outside it is necessary to exclude, or partially exclude, outside air to keep the cellar the proper temperature; this we know leads to foul air. If this cold fresh air is allowed to enter, the temperature falls, and the bee-keeper is often at a loss to know which of the two evils is the lesser.

Again, when the outside temperature is about the same as the inside, there is a tendency to stagnation, and the atmosphere in the cellar becomes vitiated, the bees are correspondingly restless and proportionately worn out and aged. Subearth ventilation has been tried, but in this the above difficulties have presented themselves to a lesser or greater degree, and many have used them for a time, in the end abandoning these methods.

To cheer and comfort the fraternity (if comfort can be derived by having brethern in tribulation), I may in passing say that dairymen who require accurate temperatures and degrees of moisture in ripening cheese have experienced all our perplexities, and those advanced in their calling are studying this question as we are.

What we require, is to be able to control temperature, and to secure a cheap and practical power by means of which we can secure a steady ventilation, or, in other words, draw or push atmosphere. For some years my thoughts ran in the direction of electricity, and altho it is not yet within the range of the practical, I believe the time is not far distant when by a system of storage batteries we will at a nominal outlay through windmills, develop electric power which can be used as required for power, heat and light, and by means of electric currents ventilators will open and shut, heat be applied or cut off automatically, as temperatures rise and fall in the cellar. But for the present, by means of artificial heat we have the power to force currents in whatever direction we may desire. The same heat also serves to regulate the temperature, and here we have an element within the reach of the practical.

The first test was conducted under the following conditions: A large stone cellar was divided into five parts, four being used for the bees, and these repositories communicated with one another by means of doors, and also by means of openings 14 inches square near the top of the room, and through these openings the pipe extended ran. The size of the pipe was 6 inches, the balance of the openings of course allowed a circulation of air from one room to another.

A stove called the "Tribune," was placed in the first room and near the cellar door which communicated with the outside, and through this floor the fresh air from the outside had access. The air in its natural course by means of the openings around the stovepipe past from room to room, and finally in the fourth room past out by means of a similar opening in the chimney—the same chimney into which the regular pipe entered. This chimney had in addition, entering it, a pipe from the stove used in the living-room above.

The fuel used at first was wood, but the pipe was too hot and irregular, and it resulted in more or less odor from the pipe, particularly the last portion which became cool before entering the flue. Stove coal was used and the fire kept up for 3½ months; stove coal was the size, and 2,550 pounds used.

There were 70 colonies in Part 1, 75 in Part 2, 80 in Part 3, and in Part 4, 75. The bees were put in Part 1, Oct. 26; Part 2, Nov. 20; Part 3, Nov. 21; and Part 4, Nov. 22.

In the records (with one exception) the variations in temperature were very slight. The night of Feb. 14, the fire went out, and the next morning the cellars registered as follows: Part 1, 38°, Parts 2 and 3, 40°, and Part 4, 42°. You will notice that the temperature was raised by the bees as it past from cellar to cellar. There was a wet and dry bulb thermometer in each cellar, and the temperature half way between the floor and ceiling was as follows:

	Dry.	Wet.		Dry.	Wet.
Part 1,	46°.	43°.	Part 3,	45°.	43°.
Part 2,	45°.	43°.	Part 4,	46°.	45°.

The difference in temperature of top and bottom of Part 2 was three degrees; in Part 4, six degrees. In Part 4, there was a fire in the room above; in Part 2, this was not the case. I draw attention to this as some may consider these variations sufficient when taking the temperature of a cellar. You will notice that Parts 1 and 4 dry bulb both stood at 46°, but the wet in Part 1, the first cellar into which the pure air past, stood at 43°, and Part 4, at 45°; into this the air went after being through the other three cellars, the added moisture we would expect to have been expelled by the bees in the previous cellars. Moisture and temperature were taken, but how about the impurity? I think I can give you several practical indications of this, at least the weight of evidence tends to show that pure air is an important factor.

The bees in Part 1 cellar appeared to be quieter than in Part 4; leaving a lamp burning for even a half hour in Part 1 the bees never flew to the light in Part 4; altho they did not fly to any great extent to the light there was a tendency in this direction. In fact, all through the winter they were more restless in the last cellar, and to prevent great injury to the bees, fresh air from another source was allowed to enter Part 4 cellar.

There was no perceptible difference in the first three cellars—the bees could be seen clustering quietly in Part 1, some of the hives being within 7 feet of the stove. A thorough inspection was made March 19, the contents of the hives being examined at the entrance, and upon lifting cushions and quilts, when possible, not the slightest indication of mold or dampness could be detected. Only two colonies showed the least sign of dysentery, and these had bees whose queen had shown symptoms of the same disease the winter before, and were kept purposely to see if they would have the disease again.

Part 1 cellar contained 60 colonies, with bottom-boards on the hives as on the summer stands, and entrance full width. Fifteen had 2-inch rims placed under the brood-nest.

Part 2 contained 50 hives, with the back ends of the hives 3 inches higher than the front, and the brood-chamber ⅜ inch from the bottom-boards, and 25 colonies with 2-inch rims under the brood-nest.

Part 4 had 75 colonies, all the backs of hives raised ⅜ inch from the bottom-boards.

All the hives were covered with a cloth, and over the cloth one inch of sawdust. The bees were placed on their summer stands April 7, 8, 9 and 11. As to method of adjusting entrances and bottom-boards, there appeared to be no great difference in results. With the exception of several starved and mice-destroyed colonies, every one came through alive and in good condition. The indications of good wintering were:

1st. Their quiet condition.

2nd. Bees clustered compactly.

3rd. Individual bees did not fly to the light from the stove, lamp or outside door through which the fresh air had access.

4th. There was no brood in the hives when placed on their summer stands.

The air passing from cellar to cellar is not a condition to be desired, but it served as a splendid object lesson to the bee-

keepers of the country, and emphasized the desirability of having pure air, as no other experiment could. A similar experiment was tried during the winter of 1896-97, and with similar results.

There is one point I wish to emphasize, and an additional experiment during the past winter goes to show the importance of this. The chimney into which the foul air passes, must be what we call a live chimney—it must have a pipe with hot air constantly passing into it. Why? Because in this way we secure the power necessary to make the current travel one way in the chimney. We know that cold air will rush into warm, and the variations in temperature is a cause for the movement of atmosphere. Last winter I arranged another cellar with the same method in view. The stove was boxt in a compartment about 4 feet square, as air-tight as matcht lumber, felt paper, and sheet iron could make it. A shaft of fresh air opened under the stove, and half way between ceiling and floor, and at opposite sides two pipes led to the bee-cellar, the pipes discharging pure atmosphere along the cellar walls. I could not reach a live chimney, so put the foul air pipe outside of, and about the stove-pipe, making a double pipe, thinking that the heat from the stove would act as a sufficient motor to secure a steady current of air. During cold weather, everything workt well, but when the fire was low there was not sufficient heat in the pipe, and the atmosphere would become stagnant or the current reverst, and instead of the foul air being carried off by the pipe, the cool air would rush down the ventilating-pipe and into the cellar without passing through the heating compartment. The direction of a current can readily be detected by means of a sheet of paper held close to the opening. The sheet of paper will be drawn in the direction of the current. There were slight symptoms of dysentery in some; only one colony was found dead when taken out and one was queenless; it was an improvement on no regular ventilation, but not satisfactory.

So much for pure air and artificial heat. You will notice that the appliances available were not perfect. A cellar should be so constructed that air can enter and escape only through regular openings. What is required is a thoroughly equipt apiary, and buildings specially constructed for experimental work in every county. R. F. HOLTERMANN.

Mr. Holtermann's paper was discust by Dr. Besse, Dr. Miller, Dr. Mason, Jacob Dickman and others; and after a recess of ten minutes Capt. J. E. Hetherington, of New York, cas called out, and was most heartily applauded. All seemed anxious to do the Captain honor, and he highly appreciated the markt evidence of esteem, and in a very instructive and entertaining talk delighted the convention.

Next came a paper by Mr. E. Whitcomb, of Nebraska, on

Apiarian Exhibits at Fairs.

At the fairs is where the apiarist dons his Sunday suit and places before the public the finest product of his or her apiary. These exhibits are beneffcial in many ways. First,

E. Whitcomb.

they are the main educators of the general public. In the past 13 years in the apiary department of our State I have many times stopt my busy work to explain to some rural body that the extractors were not churns; that we produced no strained honey at this time, and that the pure, clear extracted honey on exhibition was as far, in flavor and purity, from being the strained honey of our younger days as the east is from the west.

In my observations at the fairs I more than suspect that the education has not been entirely with our rural friends, but that it has gone into the largest apiaries of the country. At the fairs we meet in friendly and often close communion. Here we exhibit our skill as bee-masters, our good taste and neatness in performing our part in showing our goods to the best advantage, for if we please the eye we also tickle the palate and thus increase the demand.

During the past few years I have pleasantly noted the strides that have been made in the manner of making exhibits; that the finest honey placed on exhibition in colored glass failed to attract the eye of the great throng who viewed the exhibit, and finally scored several points below when the expert judge summed up for placing the awards; the dark-colored sections or a liberal amount of propolis untidily left upon them was also a cause of failure. Here is where we reap the great benefit from making exhibits at fairs. We get better acquainted with one another, and are enabled to get a better interchange of ideas, and to annually make some improvement, some advancement, from what we have seen and heard at the fairs.

We have yet great improvement to make in these exhibits, in the manner of placing them, and in the awarding of premiums. In our own State fair we have adopted a system of making all entries within the department where they are to be exhibited, thus saving the exhibitors the trouble of ranging around the Secretary's desk, and often being waited upon by clerks who have little experience in this department, or have little idea of just where the entries of different articles should be made.

Again, the system of score cards has been adopted with 100 as the maximum, with a judge who is an expert, and the different exhibits in their class going before him by the number of their entry rather than the name of the exhibitor. This plan can hardly fail of giving entire satisfaction, of knowing that favoritism at least did not figure them.

Not only the honey-producer but the supply-dealer should take an interest in the exhibits at the fairs, both local and State. When we are at the fairs we are somewhere in the line. When not in line we have dropt out, and no exertion otherwise can give us the standing with our customers that an exhibit can when we meet them face to face and are better acquainted. E. WHITCOMB.

Following Mr. Whitcomb's paper, Mr. W. Z. Hutchinson, editor of the Bee-Keepers' Review, of Michigan, read a paper on

Suggestions on the Making of Exhibits at Fairs.

Dealers in apiarian goods, and manufacturers of these goods, have made exhibits at the fairs for the sake of the advertising that may be secured thereby; The producers of honey have also exhibited their product for the sake of the advertising, and for the sake of what they might sell at the fairs. Others have exhibited bees and honey at fairs mainly for the sake of securing the premiums offered. It is with the latter object in view that I have made exhibitions, and it is from this point of view that my suggestions will be made.

The first thing to be considered is the premium list. It is at the winter meeting when the agricultural societies revise their premium lists, and to these meetings should be sent a delegate, or delegates, from the State bee-keepers' societies with instructions to look after the interests of the bee-keepers. I went one winter, with Mr. H. D. Cutting, to the meeting of our State Agricultural Board, and succeeded in getting the premium list raised from $150 to $300. Whoever has charge of the preparation of the list should be extremely carefull as to the wording, that it be so simple, yet so specific and clear that it cannot be misunderstood. I must say that I admire the New York list in one respect, it limits the amount of honey that shall be shown. The limit is 250 pounds, no more and no less. In times past the premium was offered on the largest exhibit. Now most of the lists say, "the most attractive display." This is much better. It is true that size may be one factor in the attractiveness of a display, and the Illinois list places quantity at 40 per cent in 100 points. But if 250 pounds of honey are shown, I think that better results may be secured by offering a premium upon the quality of the honey and the attractiveness in which it is put up, than by offering a premium on a large quantity. Put the exhibitors on their mettle as to attractiveness of display. As it now is, the

displays are, mostly, simply big piles of honey as it might be piled up in some commission merchant's store.

Extracted honey in the liquid form cannot be shown to much advantage except in glass, and if the glass is of the white or flint variety, and there is a window back of the exhibit, the light coming in and "shimmering and glimmering" as it strikes the honey, a very beautiful display may be made. There ought also to be an exhibit of candied honey, and explanatory labels, then when honey candies on the hands of some ignornant purchaser—or rather, purchaser that once was ignorant—he will know that it has not "turned back to sugar." I am glad to note that Illinois offers premiums on displays of candied honey. Illinois has done another good thing, she has gotten up a score card to be used in judging the honey exhibits. This shows exhibitors upon what points their exhibits are to be past, and is a guide to the judge. I believe that Illinois now stands near the head as regards her apiarian premium list and show at the State fair. One reason for this is because her bee-keepers hustle and tell the managers what they want. The managers of fairs are usually willing to grant anything reasonable that is askt of them. The reason, or, at least one reason, why the premium lists of so many States are so meager is because the bee-keepers have never askt for anything better.

Of course, I am saying considerable about the premium list, but that is the foundation of all successful and profitable exhibits. In most of the other departments of the different State fair lists there is something approaching uniformity—that is, the horse department of the premium list of Michigan does not differ materially from that department in other premium lists, and their is no reason why the same uniformity might not exist in the apiarian department; in fact, it is approaching that now to some extent. No list any longer offers premiums on full colonies of bees—they all say: "single-comb observatory hive." But let the premium list be what it may, the exhibitor should make it his guide and counsellor. It should be studied thoroughly; not only the apiarian part, but all of the rules and regulations. The exhibits must fit the list—must comply with its requirements. I remember an old man who once made quite a creditable exhibit, perhaps as good as some exhibitor who received $75 in premiums, yet this old man received only one meager premium of $2.00. He felt that he was treated unfairly, but the only trouble was that his exhibits did not meet the requirements of the list.

Plan well before hand what you will exhibit, and how you will exhibit it. To illustrate, one man who had had no experience in exhibiting at fairs met me the second morning after we were on the grounds and said: "Well, I suppose that you have been planning all night just how to put up your exhibit so as to 'do me up?'"

"No" I answered, "I knew before leaving home exactly in what shape I should set up my exhibit."

"You did?" he exclaimed. "Well, that beats me. Had it all planned out before you left home? Well, well."

This planning and arranging an exhibit is half the battle. Time, and time again, have I seen an exhibitor beaten by some one who had fewer and inferior goods, but who knew how to exhibit them to the best advantage. Many a time have I heard H. D. Cutting say, in passing an exhibit, "Wouldn't I like to get in there and arrange that exhibit. Some of you fellows would have to take a back seat if that exhibit was only up in sbape." And he was correct.

Have everything the very best that it is possible for you to get it. Remember that in these days it is only the very best that can secure a premium. To go to a fair with a second-grade article is only time and money wasted. Never stop with "That's good enough," or "That will have to do." It is good enough only when you can make it no better, and even then you will often find that it is only second best. Nothing takes the conceit out of a man like making exhibits at the fairs. I have been at it now for about 15 years, going to five State fairs last year, and I expect to start next week on a similar trip, and I suppose it is this experience that is largely to blame for my modesty.

But to return. Not only have everything first-class, but have it ready at least a week before you start. If you don't, you will be hurried at the last, you will forget things, not do good work, and leave home tired and flustrated, and if there is any place that a man needs to be at his best, it is with an exhibit at a fair. Have everything all ready and boxt, and each box labeled with its contents, so that you will not have to be opening box after box in a worried search for a needed article.

I remember one great, big, stout, enterprising bee-keeper, whose home is in this city, who once upon a time came up to Detroit with an exhibit. His comb honey was packt in bulk in big boxes, his honey-crates or cases in the flat, his extracted honey in bulk, and his bottles ordered of Muth to be sent by freight to Detroit. How many times he went to the freight office after those bottles I do not know. But they finally came and were washt and filled in the night. Then there were broken combs to be disposed of in some way and the drip cleaned up. The sound of his hammer kept folks awake until four o'clock in the morning, and then he lay right down on the hard floor and slept the sleep of the—exhausted, I guess.

Not only should the comb honey be packt in its exhibition cases, but the cases should be in a dust-proof case or crate with handles on the end. The extracted honey should be bottled and packt.

By the way, the nicest way of packing bottles of honey is by the use of cardboard, of the cellular style, made into partitions after the egg-crate style. It is cheap and furnisht cut up. I had about 500 bottles packt that way last year and took them to five State fairs and not one bottle was broken. A little excelsior is put in the bottom of the boxes.

Now a suggestion (you know this paper is only suggestions) about preparing bees for exhibitions. Take two combs of bees and sealed brood from the colony having the bees you desire to exhibit. Set them in a hive. Put a queen in a cage on top of the frames. Shut up the hive and keep it shut up until towards night the next day. Keep it out of the sun while it is closed. When it is opened set it by the side of the old colony. In a day or two most of the old bees, that is, the flying bees, will have returned to the old hive. Now release the queen. Do this a week or two before the bees are to go away. The day before they are to go away take them to a new stand. Shake the bees from one of the combs, returning it to the old colony. This gives an abundance of young bees that can bear confinement. The day that the bees are to go away, set the comb of bees into the little single-comb hive in which they are to be exhibited. There must be an abundance of room and plenty of ventilation. There must be room at the bottom, top and sides, and one side of the hive should be wire cloth, the other of glass. Don't take bees without a queen, as queenless bees worry more. With bees prepared in this manner I have had them build great pieces of comb, and when bees do this they are not suffering.

Ship your exhibit by freight and go with it, if you have to go in a freight car. I have done this many times and enjoy the novelty, altho I must admit that it is a little lonesome at night. This is the only way to get an exhibit around in time, (especially if you go from one fair to another) and not have your goods smasht. Take a tent and sleep on the fair grounds. When there are several bee-keepers present, all can share one tent, each bringing his bedding and some provisions, and buying when more are needed. In this way the expenses are very slight, the fare excellent, and the enjoyment supreme. I might say it is the one outing of the year with me.

There are often many little mishaps and delays and annoying circumstances. Don't let them upset you. Keep cool and look at the matter philosophically. And, above all, don't let the loss of expected premiums sour you and spoil your enjoyment. I never yet received all of the premiums that I expected to win, but, at the same time, I have often received those that were unexpected.

And when the fair is over don't get in too big a hurry to get away. The great mass of goods on the grounds have been several days accumulating, and they can't be removed in a few hours. It takes time. I have seen men fret and stew, and swear and sweat, and stay up all night trying to get away, while others who went to bed and took things coolly went out on the same train as the "fretters."

But I have written enough, and shall be glad to listen to others.

W. Z. HUTCHINSON.

R. F. Holtermann—If I were going to place a limit upon the amount of honey in a display I would put the amount at 500 pounds for comb, and the same for extracted honey. Then I would have another lot of 100 pounds. Then 10 pounds in which quality and manner of putting up for market should be considered. I think that a score card is a most excellent thing. It is a guide for both the exhibitor and the judge. We can get uniformity here that we can get in no other way. I got my first ideas of exhibiting while visiting the Detroit Exposition. Mr. Hutchinson's paper is full of good suggestions. It shows that he has been there. That little point of marking upon the boxes what they contain shows that he has had experience.

Rev. E. T. Abbott—We in Missouri at one time had a larger premium list than any State except Michigan. When we first began making exhibits of honey but little attention was paid to the matter. Our markets were poor. But, as we increast our displays, the demand for honey increast. We do not want to diminish the *size* of our displays. When there is a big display people will come in and say, "Honey, honey!

why, I didn't suppose that there was so much honey in the world!" If your State fair does not offer much in premiums, never mind; make a display next year, then they will give more.

FIRST DAY—EVENING SESSION.

Hon. R. L. Taylor, ex-Superintendent of the Michigan Apiarian Experiment Apiary, having been requested to prepare a paper, sent the following, which was read by the President:

Relation of Bees to Horticulture.

There is a widespread prejudice against the honey-bee. Why? I want to explain to you as well as I can in the few minutes allowed me, facts that go to show that the prejudice is unfounded, and that the honey-bee is the greatest friend of the fruit-grower, if not indispensable to successful horticulture.

There is in plants or flowers what answers to sex in animals. Sometimes both sexes exist in the same flower, sometimes in different flowers of the same plant, sometimes on separate plants. But whatever the plan of growth, fruitfulness depends upon the fertilization or pollination of the pistil by the grains of pollen produced on the stamen. The stigma, generally the upper part of the pistil, is a part denuded of the epidermis, toucht with a viscid (sticky) substance, and when the proper pollen adheres to this part the pollen puts forth pollen-tubes which lengthen till they reach the ovules, which completes fertilization and causes fruit or seed to grow.

In our fruits generally both pistil and stamens are present in the same flower, tho there are exceptions. Under such circumstances one's first thought, perhaps, would be that there could be no difficulty in securing thorough pollination.

But we have other principles to reckon with. Nature abhors in-breeding, and resorts to various devices to prevent it, the most familiar one being the "ripening" of the two parts of the flower at different times, and pollen from the same flower in most cases has a much less potent influence on the pistil if indeed it has any at all.

But you may ask, Are not our fruits exceptions in this matter? Let facts answer:

Prof. A. J. Cook carefully experimented with the bloom of the apple, crab apple, pear, cherry, strawberry, raspberry and clover. In some cases the experiment was duplicated or triplicated. In each particular case an equal number of blossoms were selected from adjacent branches. One lot was markt with a tag, the other surrounded by cheese-cloth. I cannot enter into details, but these are the results:

	Blooms.	Covered Fruits.	Uncovered Fruits.
Apple	40	0	15
"	75	0	3
Crab apple	200	0	3
Apple	160	2	9
Pear	140	0	7
Cherry	300	9	119
Strawberries	60	9	27
"	212	80	104
"	123	20	36
Raspberries	184	93	160
Clover (red)	10 h'ds	0	191
Clover (white)	10 h'ds	0	541

Again, in 1894, since his removal to California, Prof. Cook made similar experiments with plums, cherries and pears. Two plum trees, one cherry, and two pear trees were made use of in the experiment. On each tree three lots of blossoms were selected instead of two (as in the other case), the number of blossoms varying in each tree from 32 upward, the lots on any one tree of course having an equal number. One lot on each tree was left uncovered, the second lot was covered, but with bees introduced under the covering, and the third lot was covered, excluding all bees. All proper precautions were taken to secure reliable results. The result was that there was not a single fruit on any of the twigs from which bees were shut out. On the twigs covered with sacks, into which bees were put, there were on the plums three and five, the cherry five, on the pears six and eight respectively. On the uncovered branches of the plums were eight and five, the cherry seven, and the pears eight and eleven:

	Covered.	Bees enclosed.	Not covered.
Plums	0	3	8
	0	5	5
Cherry	0	5	7
Pears	0	6	8
	0	8	11

From one-fourth to one-twentieth only develop fruit, but this fortunately is always so.

What makes these experiments all the more favorable to the bee, is that many small insects called thrips, were noticed on the bloom inside the coverings, yet tho they must have carried pollen from anther to stigma, and from blossom to blossom, yet without so much as pollinating one pistil.

In one experiment with the plum, Prof. Cook covered a branch, and when it was in bloom, and the bees working in force on the trees, he removed the sack, and keeping watch markt the blossoms on which he saw bees work. When he ceast watching, the branch was re-covered, and at length the four blossoms alone on which he saw bees alight developt into plums.

No doubt some varieties of our common fruits are self-fertile, but none the less should cross-fertilization be sought, for the great advantage of it, even where flowers are self-fertile, is abundantly proved by Darwin and others.

It is to be noted that cross-pollination is accomplisht only by the application of the pollen of one variety to the pistils of another variety. Cross-pollination cannot be effected between two trees of Baldwins. All Baldwins are in effect one tree, so of other varieties. Hence the pertinency of the advice of Mr. M. B. Waite, endorsed by Prof. Cook:

"Plant mixt orchards, or at least avoid planting solid blocks of one variety. It is not desirable to have more than three or four rows of one variety together unless experience has shown it to be perfectly self-fertile."

In this connection I quote Prof. Barrows; he says of apples: Most varieties are practically self-sterile, and so far as we know now are completely self-fertile. In what way is cross-pollination best accomplisht? In some cases this is well done by the wind (as in *corn* and the *pine*). But with our fruits this agency must be very uncertain and ineffectual. And perhaps that fruit-blooms fail to become pollinated when the weather is too cool for insects to move goes to show the same thing. Our chief and only safe reliance for the performance of this function must be upon insects. But insects differ greatly both in numbers and activity.

During the time when Prof. Cook was making the first experiment I referred to, he made observations to determine the comparative numbers of different insects to be found upon the blossoms, and he estimated that at that time there were 20 honey-bees to one of all other kinds at work on the bloom. In his California experiments he found there were 100 bees so engaged to one of all other kinds. I think this last—100 to 1—would be nearer the rule in Michigan in the neighborhood of an apiary of any considerable size. Then if we consider the immensely greater activity of the bee over that of most other insects, darting like a shot from flower to flower, and from tree to tree, the conclusion is inevitable that we must rely chiefly for cross-fertilization on the bee.

Busy bee, pray tell me why,
Thus from flower to flower you fly,
Culling sweets the live-long day,
Never leaving off to play.

We know the answer so far as it immediately concerns the bee, but if that were the only reason, why does the flower that lasts but for two or three days secrete the nectar that attracts the bee, instead of the leaf, which endures for the season, and which could therefore so much better serve her? Nature made no mistake; the welfare of the bee was not the first consideration.

Notwithstanding all this, there is undoubtedly, as I stated at the outset, a prejudice against bees, and for these reasons:

1st. Because of a belief that the bees take something from the plant that will render it less productive; or something that is of value to the grower of the plant.

What I have already said shows the fallacy of the first branch of this belief, and as to the other branch of it I have this to say, that bees gather from domestic plants nectar and pollen only. The nectar of clover, for instance, can never be of any value to the farmer. A shower washes the blossoms so thoroughly that the bees do not work on them for several hours afterward. The nectar in that case, to be sure, goes into the soil, but any well-informed chemist would tell you that it has no value even as a fertilizer. The pollen, in like manner, if ungathered, would go into the soil, and there it would have some value as a manure, equal for that purpose to perhaps about the same quality of bran, and in no case could it amount to more than a few pounds from a large farm.

Some are so constituted that they could bear the loss with equanimity if they knew it was occasioned by bees from the woods, but would be grievously disturbed if they were conscious that it was carried to the hives of a neighbor. But I have never known a fruit-grower made on that plan.

2nd. Because of a belief that bees are continually moved by a desire to sting. This is a great mistake. Bees absolutely never volunteer to sting when absent from their hives,

displays are, mostly, simply big piles of honey as it might be piled up in some commission merchant's store.

Extracted honey in the liquid form cannot be shown to much advantage except in glass, and if the glass is of the white or flint variety, and there is a window back of the exhibit, the light coming in and "shimmering and glimmering" as it strikes the honey, a very beautiful display may be made. There ought also to be an exhibit of candied honey, and explanatory labels, then when honey candies on the hands of some ignornant purchaser—or rather, purchaser that once was ignorant—he will know that it has not "turned back to sugar." I am glad to note that Illinois offers premiums on displays of candied honey. Illinois has done another good thing, she has gotten up a score card to be used in judging the honey exhibits. This shows exhibitors upon what points their exhibits are to be past, and is a guide to the judge. I believe that Illinois now stands near the head as regards her apiarian premium list and show at the State fair. One reason for this is because her bee-keepers hustle and tell the managers what they want. The managers of fairs are usually willing to grant anything reasonable that is askt of them. The reason, or, at least one reason, why the premium lists of so many States are so meager is because the bee-keepers have never askt for anything better.

Of course, I am saying considerable about the premium list, but that is the foundation of all successful and profitable exhibits. In most of the other departments of the different State fair lists there is something approaching uniformity—that is, the horse department of the premium list of Michigan does not differ materially from that department in other premium lists, and their is no reason why the same uniformity might not exist in the apiarian department; in fact, it is approaching that now to some extent. No list any longer offers premiums on full colonies of bees—they all say: "single-comb observatory hive." But let the premium list be what it may, the exhibitor should make it his guide and counsellor. It should be studied thoroughly; not only the apiarian part, but all of the rules and regulations. The exhibits must fit the list—must comply with its requirements. I remember an old man who once made quite a creditable exhibit, perhaps as good as some exhibitor who received $75 in premiums, yet this old man received only one meager premium of $2.00. He felt that he was treated unfairly, but the only trouble was that his exhibits did not meet the requirements of the list.

Plan well before hand what you will exhibit, and how you will exhibit it. To illustrate, one man who had had no experience in exhibiting at fairs met me the second morning after we were on the grounds and said: "Well, I suppose that you have been planning all night just how to put up your exhibit so as to 'do me up?'"

"No" I answered, "I knew before leaving home exactly in what shape I should set up my exhibit."

"You did?" he exclaimed. "Well, that beats me. Had it all planned out before you left home? Well, well."

This planning and arranging an exhibit is half the battle. Time, and time again, have I seen an exhibitor beaten by some one who had fewer and inferior goods, but who knew how to exhibit them to the best advantage. Many a time have I heard H. D. Cutting say, in passing an exhibit, "Wouldn't I like to get in there and arrange that exhibit. Some of you fellows would have to take a back seat if that exhibit was only up in sbape." And he was correct.

Have everything the very best that it is possible for you to get it. Remember that in these days it is only the very best that can secure a premium. To go to a fair with a second-grade article is only time and money wasted. Never stop with "That's good enough," or "That will have to do." It is good enough only when you can make it no better, and even then you will often find that it is only second best. Nothing takes the conceit out of a man like making exhibits at the fairs. I have been at it now for about 15 years, going to five State fairs last year, and I expect to start next week on a similar trip, and I suppose it is this experience that is largely to blame for my modesty.

But to return. Not only have everything first-class, but have it ready at least a week before you start. If you don't, you will be hurried at the last, you will forget things, not do good work, and leave home tired and flustrated, and if there is any place that a man needs to be at his best, it is with an exhibit at a fair. Have everything all ready and boxt, and each box labeled with its contents, so that you will not have to be opening box after box in a worried search for a needed article.

I remember one great, big, stout, enterprising bee-keeper, whose home is in this city, who once upon a time came up to Detroit with an exhibit. His comb honey was packt in bulk in big boxes, his honey-crates or cases in the flat, his extracted honey in bulk, and his bottles ordered of Muth to be sent by freight to Detroit. How many times he went to the freight office after those bottles I do not know. But they finally came and were washt and filled in the night. Then there were broken combs to be disposed of in some way and the drip cleaned up. The sound of his hammer kept folks awake until four o'clock in the morning, and then he lay right down on the hard floor and slept the sleep of the—exhausted, I guess.

Not only should the comb honey be packt in its exhibition cases, but the cases should be in a dust-proof case or crate with handles on the end. The extracted honey should be bottled and packt.

By the way, the nicest way of packing bottles of honey is by the use of cardboard, of the cellular style, made into partitions after the egg-crate style. It is cheap and furnisht cut up. I had about 500 bottles packt that way last year and took them to five State fairs and not one bottle was broken. A little excelsior is put in the bottom of the boxes.

Now a suggestion (you know this paper is only suggestions) about preparing bees for exhibitions. Take two combs of bees and sealed brood from the colony having the bees you desire to exhibit. Set them in a hive. Put a queen in a cage on top of the frames. Shut up the hive and keep it shut up until towards night the next day. Keep it out of the sun while it is closed. When it is opened set it by the side of the old colony. In a day or two most of the old bees, that is, the flying bees, will have returned to the old hive. Now release the queen. Do this a week or two before the bees are to go away. The day before they are to go away take them to a new stand. Shake the bees from one of the combs, returning it to the old colony. This gives an abundance of young bees that can bear confinement. The day that the bees are to go away, set the comb of bees into the little single-comb hive in which they are to be exhibited. There must be an abundance of room and plenty of ventilation. There must be room at the bottom, top and sides, and one side of the hive should be wire cloth, the other of glass. Don't take bees without a queen, as queenless bees worry more. With bees prepared in this manner I have had them build great pieces of comb, and when bees do this they are not suffering.

Ship your exhibit by freight and go with it, if you have to go in a freight car. I have done this many times and enjoy the novelty, altho I must admit that it is a little lonesome at night. This is the only way to get an exhibit around in time, (especially if you go from one fair to another) and not have your goods smasht. Take a tent and sleep on the fair grounds. When there are several bee-keepers present, all can share one tent, each bringing his bedding and some provisions, and buying when more are needed. In this way the expenses are very slight, the fare excellent, and the enjoyment supreme. I might say it is the one outing of the year with me.

There are often many little mishaps and delays and annoying circumstances. Don't let them upset you. Keep cool and look at the matter philosophically. And, above all, don't let the loss of expected premiums sour you and spoil your enjoyment. I never yet received all of the premiums that I expected to win, but, at the same time, I have often received those that were unexpected.

And when the fair is over don't get in too big a hurry to get away. The great mass of goods on the grounds have been several days accumulating, and they can't be removed in a few hours. It takes time. I have seen men fret and stew, and swear and sweat, and stay up all night trying to get away, while others who went to bed and took things coolly went out on the same train as the "fretters."

But I have written enough, and shall be glad to listen to others.

W. Z. HUTCHINSON.

R. F. Holtermann—If I were going to place a limit upon the amount of honey in a display I would put the amount at 500 pounds for comb, and the same for extracted honey. Then I would have another lot of 100 pounds. Then 10 pounds in which quality and manner of putting up for market should be considered. I think that a score card is a most excellent thing. It is a guide for both the exhibitor and the judge. We can get uniformity here that we can get in no other way. I got my first ideas of exhibiting while visiting the Detroit Exposition. Mr. Hutchinson's paper is full of good suggestions. It shows that he has been there. That little point of marking upon the boxes what they contain shows that he has had experience.

Rev. E. T. Abbott—We in Missouri at one time had a larger premium list than any State except Michigan. When we first began making exhibits of honey but little attention was paid to the matter. Our markets were poor. But, as we increast our displays, the demand for honey increast. We do not want to diminish the *size* of our displays. When there is a big display people will come in and say, "Honey, honey!

why, I didn't suppose that there was so much honey in the world!" If your State fair does not offer much in premiums, never mind; make a display next year, then they will give more.

FIRST DAY—EVENING SESSION.

Hon. R. L. Taylor, ex-Superintendent of the Michigan Apiarian Experiment Apiary, having been requested to prepare a paper, sent the following, which was read by the President:

Relation of Bees to Horticulture.

There is a widespread prejudice against the honey-bee. Why? I want to explain to you as well as I can in the few minutes allowed me, facts that go to show that the prejudice is unfounded, and that the honey-bee is the greatest friend of the fruit-grower, if not indispensable to successful horticulture.

There is in plants or flowers what answers to sex in animals. Sometimes both sexes exist in the same flower, sometimes in different flowers of the same plant, sometimes on separate plants. But whatever the plan of growth, fruitfulness depends upon the fertilization or pollination of the pistil by the grains of pollen produced on the stamen. The stigma, generally the upper part of the pistil, is a part denuded of the epidermis, toucht with a viscid (sticky) substance, and when the proper pollen adheres to this part the pollen puts forth pollen-tubes which lengthen till they reach the ovules, which completes fertilization and causes fruit or seed to grow.

In our fruits generally both pistil and stamens are present in the same flower, tho there are exceptions. Under such circumstances one's first thought, perhaps, would be that there could be no difficulty in securing thorough pollination.

But we have other principles to reckon with. Nature abhors in-breeding, and resorts to various devices to prevent it, the most familiar one being the "ripening" of the two parts of the flower at different times, and pollen from the same flower in most cases has a much less potent influence on the pistil if indeed it has any at all.

But you may ask, Are not our fruits exceptions in this matter? Let facts answer:

Prof. A. J. Cook carefully experimented with the bloom of the apple, crab apple, pear, cherry, strawberry, raspberry and clover. In some cases the experiment was duplicated or triplicated. In each particular case an equal number of blossoms were selected from adjacent branches. One lot was markt with a tag, the other surrounded by cheese-cloth. I cannot enter into details, but these are the results:

	Blooms.	Covered Fruits.	Uncovered Fruits.
Apple	40	0	15
"	75	0	3
Crab apple	200	0	3
Apple	160	2	9
Pear	140	0	7
Cherry	300	9	119
Strawberries	60	9	27
"	212	80	104
"	123	20	36
Raspberries	184	93	160
Clover (red)	10 h'ds	0	191
Clover (white)	10 h'ds	0	541

Again, in 1894, since his removal to California, Prof. Cook made similar experiments with plums, cherries and pears. Two plum trees, one cherry, and two pear trees were made use of in the experiment. On each tree three lots of blossoms were selected instead of two (as in the other case), the number of blossoms varying in each tree from 32 upward, the lots on any one tree of course having an equal number. One lot on each tree was left uncovered, the second lot was covered, but with bees introduced under the covering, and the third lot was covered, excluding all bees. All proper precautions were taken to secure reliable results. The result was that there was not a single fruit on any of the twigs from which bees were shut out. On the twigs covered with sacks, into which bees were put, there were on the plums three and five, the cherry five, on the pears six and eight respectively. On the uncovered branches of the plums were eight and five, the cherry seven, and the pears eight and eleven:

	Covered.	Bees enclosed.	Not covered.
Plums	0	3	8
	0	5	5
Cherry	0	5	7
Pears	0	6	8
	0	8	11

From one-fourth to one-twentieth only developt fruit, but this fortunately is always so.

What makes these experiments all the more favorable to the bee, is that many small insects called thrips, were noticed on the bloom inside the coverings, yet tho they must have carried pollen from anther to stigma, and from blossom to blossom, yet without so much as pollinating one pistil.

In one experiment with the plum, Prof. Cook covered a branch, and when it was in bloom, and the bees working in force on the trees, he removed the sack, and keeping watch markt the blossoms on which he saw bees work. When he ceast watching, the branch was re-covered, and at length the four blossoms alone on which he saw bees alight developt into plums.

No doubt some varieties of our common fruits are self-fertile, but none the less should cross-fertilization be sought, for the great advantage of it, even where flowers are self-fertile, is abundantly proved by Darwin and others.

It is to be noted that cross-pollination is accomplisht only by the application of the pollen of one variety to the pistils of another variety. Cross-pollination cannot be effected between two trees of Baldwins. All Baldwins are in effect one tree, so of other varieties. Hence the pertinency of the advice of Mr. M. B. Waite, endorsed by Prof. Cook:

"Plant mixt orchards, or at least avoid planting solid blocks of one variety. It is not desirable to have more than three or four rows of one variety together unless experience has shown it to be perfectly self-fertile."

In this connection I quote Prof. Barrows; he says of apples: Most varieties are practically self-sterile, and so far as we know now are completely self-fertile. In what way is cross-pollination best accomplisht? In some cases this is well done by the wind (as in *corn* and the *pine*). But with our fruits this agency must be very uncertain and ineffectual. And perhaps that fruit-blooms fail to become pollinated when the weather is too cool for insects to move goes to show the same thing. Our chief and only safe reliance for the performance of this function must be upon insects. But insects differ greatly both in numbers and activity.

During the time when Prof. Cook was making the first experiment I referred to, he made observations to determine the comparative numbers of different insects to be found upon the blossoms, and he estimated that at that time there were 20 honey-bees to one of all other kinds at work on the bloom. In his California experiments he found there were 100 bees so engaged to one of all other kinds. I think this last—100 to 1—would be nearer the rule in Michigan in the neighborhood of an apiary of any considerable size. Then if we consider the immensely greater activity of the bee over that of most other insects, darting like a shot from flower to flower, and from tree to tree, the conclusion is inevitable that we must rely chiefly for cross-fertilization on the bee.

Busy bee, pray tell me why,
Thus from flower to flower you fly,
Culling sweets the live-long day,
Never leaving off to play.

We know the answer so far as it immediately concerns the bee, but if that were the only reason, why does the flower that lasts but for two or three days secrete the nectar that attracts the bee, instead of the leaf, which endures for the season, and which could therefore so much better serve her? Nature made no mistake; the welfare of the bee was not the first consideration.

Notwithstanding all this, there is undoubtedly, as I stated at the outset, a prejudice against bees, and for these reasons:

1st. Because of a belief that the bees take something from the plant that will render it less productive; or something that is of value to the grower of the plant.

What I have already said shows the fallacy of the first branch of this belief, and as to the other branch of it I have this to say, that bees gather from domestic plants nectar and pollen only. The nectar of clover, for instance, can never be of any value to the farmer. A shower washes the blossoms so thoroughly that the bees do not work on them for several hours afterward. The nectar in that case, to be sure, goes into the soil, but any well-informed chemist would tell you that it has no value even as a fertilizer. The pollen, in like manner, if ungathered, would go into the soil, and there it would have some value as a manure, equal for that purpose to perhaps about the same quality of bran, and in no case could it amount to more than a few pounds from a large farm.

Some are so constituted that they could bear the loss with equanimity if they knew it was occasioned by bees from the woods, but would be grievously disturbed if they were conscious that it was carried to the hives of a neighbor. But I have never known a fruit-grower made on that plan.

2nd. Because of a belief that bees are continually moved by a desire to sting. This is a great mistake. Bees absolutely never volunteer to sting when absent from their hives,

but if caught in the hand or hair, or otherwise, they will try to sting, of course. But bees are tolerably quick in resenting any disturbance that threatens injury to their homes, yet with fair discretion they are wonderfully easy to get along with. But if I were not familiar with bees I would not kick over a live hive in summer time, nor operate a heavy road-scraper on dry, stony ground within three or four rods of an apiary, nor hitch a team where bees were passing and repassing (even tho I were one of that class whom bees never sting), without taking the advice of some one skilled in the management of bees.

3rd. And last, because of a belief that bees do injury to ripe fruit.

There is no question that during times of dearth of nectar in warm weather, that bees seek to gather the juices of broken fruit, and some fruit-growers contend that they actually cut through the skin of the grape—some are very positive, affirming that they know they do—that they have actually witnest the operation. I feel some sympathy for this class, since once, tho familiar with the arguments against it, I was more than half inclined to believe that in some way bees sometimes forced open the skin of grapes. For years I have taken great pleasure in raising a considerable variety of grapes, and when I sometimes saw the bees crowding their heads between the berries of fine, compact and apparently perfect bunches of Delawares, and afterward found that many of the berries were suckt dry, my faith in the bees inability weakened greatly.

Further investigation showed that while ruptures of the skin of the Duchess grape were plainly seen, none were ordinarily evident in a ruptured Delaware. In short, I found that grapes of different varieties varied in their manner of cracking—some cracking lengthwise, and others crosswise or diagonally.

The cracking is, I think, caused by the crowding of the berries upon each other, which is induced by their swelling, owing to abundant moisture. At least so far as I have observed, the cracking is confined almost entirely to compact clusters.

Of the many varieties I have in bearing, the work of the bees has usually been confined almost exclusively to the Delaware and the Lady; but on account of the wetness of the season, the Duchess and the Salem were added to the list last year, and these are the ones to which cracking was almost exclusively confined. It was a significant fact that the work of the bees was confined to the compact clusters of these varieties, while the loose clusters neither crackt nor were visited by bees.

In all these, except the Delaware, the cracks were plainly seen on the visible part of the berries. In the Delaware the cracks are out of sight, being transverse, and near the stem end.

In July last, the rainfall being so great that more than the usual amount of cracking was anticipated, I decided to determine, if possible, whether grapes from which bees were excluded, but still left on the vines, suffered in any different degree from those to which the bees had free access. To shut out the bees, paper sacks were used, folded over the clusters and pinned. More than a thousand sacks were put upon grapes of the 13 varieties I am about to mention. Many of these become ripe early in September, and by the 24th all were ripe except Jefferson and Iona.

In the case of the following, there was no damage either inside the bags or out, viz.: The Agawam, Eaton, Eumelan, Iona, Lindley, Niagara and Ulster. Brighton suffered none in the sacks, little out. The Diamond, a little in and a little out. The Jefferson, a very little in and the same out. The Delaware, Duchess and Salem suffered much in, and somewhat less out.

In the case of the three kinds much injured, it became constantly more evident that the damage to those in the bags was greater than to those to which the bees had access. This was especially true of the Duchess and the Delaware. So evident was it that the reason of this lay in the fact that the juice oozing from the crackt grapes in the bags was communicated to contiguous sound grapes, causing weakness of skin, cracking, and incipient decay, that by the middle of the month of September I hastened to remove the bags from these varieties, that the bees might gather the juice from the broken grapes.

To my mind, the conclusion is inevitable, that not only do bees not injure grapes, but that by gathering the juices of crackt ones they prevent decay, and thereby the destruction of sound grapes. R. L. TAYLOR.

Dr. C. C. Miller—I don't believe that there is much good that can come from our discussing this paper, but it would do lots of good if it could be laid before the horticultural class. It might be put in our home papers, or brought up at our farmers' institutes, and do good in that way.

Rev. E. T. Abbott—There is one more point that ought to be brought out, and that is that secretion of nectar stops as soon as the blossom is fertilized, the same as the extra energy of a female animal is turned to the production of a new life in reproduction.

E. R. Root—If no one else does anything about this matter, we will get out Mr. Taylor's paper in the form of a leaflet, and give it away.

Mr. Abbott—Can't this association do something to prevent the spraying of trees while in bloom?

R. F. Holtermann—We now have in Ontario a law against the spraying of trees while in bloom. The outer covering of the fertilizing part of blossoms is very tender, and to spray when in bloom, even with water, may work an injury, hence those who spray when the trees are in bloom are destroying their own fruit.

W. Helm—In Ohio the experiment stations are issuing bulletins in regard to spraying, and but very little of it is done out of season.

(Continued next week.)

Wintering Bees in Snow-Banks.

BY G. M. DOOLITTLE.

I am askt to give an article in the American Bee Journal on wintering bees in a snow-bank, the one desiring this article wishing to know if he can winter bees successfully by setting them near a hedge that he has at one side of his apiary, over which the snow usually drifts so that there is a continuous bank of snow there from early in December till the first of April, or later. He says he has been advised to put them in this place, but before doing this he wisht the advise of others.

Years ago we used to hear more about wintering bees under snow than we do of late, and from the general advice of that time I was led to test the matter, as nearly every one said that bees wintered well under snow. But my experience was not in accord with this, however, as I found that if the hives were covered from half to two-thirds of the way up the brood-chamber they wintered well; but if the hives are covered completely over, and stay so for any length of time it is a positive damage to the bees, and worse than no snow at all.

For several winters, when I first began to keep bees, I wintered my bees in the cellar, but not attaining the success which I thought was necessary, I concluded to winter them on the summer stands during one winter, and as the snow fell sweep it up around the hives. I did this, and by the forepart of December I had the hives covered from sight. This made little snow mountains all over the yard, and I was so enchanted with the thing that I wondered that I had never thought of it before. At the end of about a month we had a thaw, when I lookt at the bees and found that their warmth had so thawed the snow that a cat or rabbit could easily go all around between the hives and the snow. I was much pleased over the apparent success, and concluded that I had now found just the way to winter bees. The bees appeared, however, to be rather restless, for upon raising the covering some flew out and were lost in the cold air, instead of being quiet, as they usually were in the cellar. As the next day was fine they all had a cleansing flight, and all appeared well.

The winter now changed so that instead of having snow for most of the time as we usually do, there was little or no snow the rest of the time till spring opened. At that time I found that I had lost fully one-third of my bees, while those that were left were not at all strong in numbers. I thought this was owing to our almost snowless winter, and I believed that, if I could have had snow to cover them all winter, no loss would have occurred. One thing I noticed, however, which was that all the hives which I opened at the time of the thaw had brood in from two to three combs, while in April scarcely a bit of brood was to be found in any hive. I reasoned that had the snow continued, brood-rearing would have

been kept up, and in the spring the hives would have been well stockt with young bees instead of the depopulated colonies I had. The next winter put an end to these thoughts, however, for this time we had snow, so I kept them covered the whole winter.

About the middle of winter there came a warm day so the bees could fly, and upon examination I found several hives that had brood in four to five frames, while others not so deeply buried did not have half as much. I noticed that the bees in those hives which had the most brood were so heavily loaded with excrement that they were scarcely able to fly, while those with but little brood spotted the snow but very little. But instead of seeing my mistake I figured how many bees would hatch out in the hives having the most brood, during the next 21 days, and this brood would increase as the time went by, so that by early spring I would have a rousing colony in each of these hives having the most brood.

Cold weather with more snow came and held till into March, when we again had a day that the bees could fly. How eagerly I shoveled out the colonies having the most brood when they flew before, expecting to find their hives full of bees, but instead I found nearly all of the old bees dead on the bottom-board, and the young, fuzzy bees clustered closely together where they had hatcht before the old bees died, cold in the embrace of death. Not only this, but these colonies had consumed nearly all the honey in rearing this brood, so I had nearly a total loss except the combs.

When the working season arrived I found I had lost nearly two-thirds of my bees, and those left were not strong enough to take full advantage of the honey-flow when it came. The difficulty in this locality seems to be that, as soon as the hives are covered with snow, the warmth from the ground, combined with the warmth of the bees, makes it so warm that the bees become uneasy, go to breeding, consume large quantities of honey, thus using up their vitality, which causes them to die of old age during February, March and April, while the young bees are not equal in strength and vitality to bees hatcht in September and October to withstand the cold, so spring dwindling and death are the result.

In the above I have given what I have since found in every case which has come under my notice where bees have been drifted under snow for any length of time. Since the winters above mentioned we had a winter in which we had very deep snow, and owing to a peculiar wind and a new fence which I had put up many of my hives were in snow from 5 to 10 feet deep. I tried as far as possible to keep the hives shoveled open, but I completely lost track of 10 colonies, of which not one was living the first of May.

From the above experience, during 18 or 20 years, my advice to all would be to go slow in this matter, who are not sure that the plan of wintering bees under snow is a success with them. Try only a few at first, till you know for certain that you are right, and then if your experience says the plan is good with you, the whole apiary can be used.

Onondaga Co., N. Y.

The National Bee-Keepers' Union.

(An open letter to the Advisory Board and to the Members in general.)

BY WM. MUTH-RASMUSSEN.

Nearly a year has past since the vote on amalgamation was taken, and it will soon be time for the next annual election—the only time for a general decision, as no meetings are held by this Union.

During the past year the defeat of the amalgamation proposal has been discust and commented upon in the bee-papers, and the members have had time to think the matter over, and perhaps to change their minds in regard to the desirability of amalgamation. I wish to ask the Advisory Board if anything is being done or contemplated in regard to having a new vote on this subject taken at the ensuing election? As the United States Bee-Keepers' Union has assumed the task of defense—the only object of the National Bee-Keepers' Union—I fail to see the use of supporting two associations for one and the same purpose. The new Union has other objects, all of great importance to bee-keepers; but that is no reason why the subject of defense could not be handled just as effectively by the new as it has been handled by the old Union.

The National Bee-Keepers' Union has for several years had more money on hand than there was any need of, and has remitted to members in good standing their annual dues. Whether the dollar will be called for or not at the next annual election, I do not know. But I do know, that if I have only one dollar to spare, I shall perfer to hand it over to the new Union and take my chances for defense through this, if necessary.

It would have been desirable if this matter could have been discust and decided upon before the Buffalo convention, but as nobody has brought the subject up, I now make this proposition:

Let the Advisory Board call for another vote on amalgamation, on the following basis:

1st. The National Bee-Keepers' Union to be dissolved.

2nd. The funds on hand, together with all other belongings, to be turned over to the United States Bee-Keepers' Union.

3rd. The money now in the treasury of the old Union to constitute the defense fund of the new Union, this fund not to be used for any other purpose.

4th. Subject to approval by the United States Bee-Keepers' Union.

I would suggest that 25 per cent. of each members' annual dues be apportioned to the "defense fund," provided that at no time shall this fund exceed $500, and whenever it reaches this amount, the said percentage of dues shall go into the general fund, used for other purposes than defense.

I hope that the Advisory Board will promptly take this matter up, so that it may be decided at the coming election. Discussions are in order, but time is brief.

Inyo Co., Calif., Nov. 13.

Paraffine Paper and the Danzenbaker Hive.

BY F. DANZENBAKER.

My attention has been repeatedly called to the article by F. L. Thompson, on page 677, intimating that I attributed my success to the use of paraffine paper. Since then Dr. Miller and Mr. E. R. Root have shied their castors in the ring. Now I most empatically deny giving the use of the paper any such prominence. Any other covering equally air-tight and warm as wax or paraffine, will do as well. Its cheapness is *its chief* recommendation. It is furnisht for 2 cents, with other goods, and can be used over again if desired, Mr. Thompson to the contrary notwithstanding; and when used as designed with my super and sections during the surplus season, the sections are practically free of propolis, sufficiently so to warrant its use in the time alone saved in cleaning the sections, many times over, for all the fussiness of putting it on, but it may often make no difference in the quantity and quality of the finisht sections.

One sheet of the paper was sent out last season with each super free. It was my purpose to send two sheets, which will be done in 1898, free of charge, to give all a chance to test it for themselves. The thin 2-cent sheets are not claimed to last as long as thicker ones might, but I prefer them to put on clean as needed, just as I use new sections rather than old ones.

If any using the paper last year or this feel that it is not worth all it cost them, I stand ready to refund the same.

I notice on page 715, Mr. D. N. Ritchey, in advocating small hives for wintering, inadvertently does injustice in alluding to the Danzenbaker pattern as too expensive for general use, but will try them for 1898. While my brood-chamber is as compact as possible to be, the net comb surface and inside capacity from bottom to ceiling are the same as the 8-frame dovetailed hive. The inside fixtures are strong and firm when put together—nothing flimsy about it; 20 of them in the flat, with slat-cleated bee-space separators, two paraffine mats, and nails, are sold for $24; while 20 8-frame dovetailed hives furnisht with plain separators are $17.40; 20 of these will hold 480 4¼x4¼ sections, that when filled with honey are selling here now at 12½ cents each, or $56; 20 of my hives hold, at 32 sections each, 640, that are selling to grocers from the same house at 15 cents, making $96—a net difference of $40 in a single story of sections on the 20 hives, while the difference in cost of the same is only $4.60; all is of the best possible work and material.

As some dealers charged $2.00 each for my hive, it may be this has caused the complaint. Mr. Ritchey, or any one else, ought not to start the impression abroad at the very time when the best bee-men are considering whether they shall change hives, that mine is "too expensive."

[We give the foregoing here for the reason that Mr. Danzenbaker felt that we had done him an injustice in publishing what we did from the pens of Messrs. Thompson and Ritchey. Of course, Mr. D. must expect for his hive criticism, and comparison with others.—EDITOR.]

The American Bee Journal
OLDEST BEE-PAPER IN AMERICA

GEORGE W. YORK, - Editor.

PUBLISHT WEEKLY BY
GEORGE W. YORK & COMPANY,
118 Michigan St., - CHICAGO, ILL.

$1.00 a Year—Sample Copy Sent Free.

[Entered at the Post-Office at Chicago as Second-Class Mail-Matter.

United States Bee-Keepers' Union.

Organized to advance the pursuit of Apiculture; to promote the interests of bee-keepers; to protect its members; to prevent the adulteration of honey; and to prosecute the dishonest honey-commission men.

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Vol. XXXVII. CHICAGO, ILL., DEC. 2, 1897. No. 48.

Editorial Comments.

Kind Words for the Bee Journal are constantly received at this office. We wish we could publish them all, but some of them are so strongly commendatory that it would hardly do to give them to the public. However, we wish to say to all who have so kindly exprest their appreciation of the Bee Journal and its contents, that it is a great encouragement to us, to know that our best efforts are being valued by our readers. We shall continue to strive to merit the approval of all who want a bee-paper that is *all bee*-paper, and the best that we can publish; and wish hereby to extend our sincerest thanks for the kindly words and feelings indicated by many letters that have come and are coming daily to us.

Death of Mr. De Layens.—Mr. Chas Dadant has kindly sent us the following paragraph concerning the death of Mr. George DeLayens, a noted French bee-keeper and inventor:

France has just lost her most famous apiarist, Mr. George De Layens, who died at Nice, from a stroke of apoplexy, Oct. 23, 1897. Mr. De Layens was a single man. He was born at Lille, Jan. 6, 1834. When young, he learned the mechanical arts and made several inventions. He then studied botany and bee-culture. He publisht several works on these sciences, some of them in collaboration with his cousin, Gaston Bonnier, professor at the French Academy of Sciences, of Paris. The "De Layens Hive" is one of the most popular hives in France. He was very plain in his manners; his hands were always open to relieve the needy, and in his will he gave most of his estate for purposes of benevolence.

CHAS. DADANT.

Mr. De Layens had gone to Nice to pass the winter months for his health, and was continuing his botanical works, profiting by the fine weather in taking photographs of plants.

Uniting the Two Unions.—It has been quite awhile since anything has been said in these columns about amalgamating the two Bee-Keepers' Unions. Perhaps everything was said that needed to be said—and likely a little more than was necessary, pro and con. But in the November American Bee-Keeper the subject is toucht upon in an editorial paragraph which we give here:

"The question of amalgamating the National and the United States Bee-Keepers' Unions, tho defeated by decree of the National's members, is still quite a live one, and as it is becoming more thoroughly understood, all signs now point to the ultimate consummation of the project. There seems indeed to be no good reason why the two societies should not join hands, and in their broader field of labor, under one constitution, become a power of good to the bee-keeping fraternity. 'In union their is strength;' uniting Unions ought to develop Herculean power."

Just so. We are still of the opinion that the two Unions should get together the coming winter, and prepare for doing some telling work along the line of the prosecution of adulterators of honey. Nothing else, we believe, would so much aid bee-keepers all over this great country of ours as a successful attempt in enforcing some of the State anti-adulteration laws already on the statute books. Why not all get together and form one strong body, then in solid phalanx march against the enemy?

It will be found that also Mr. Wm. Muth-Rasmussen, in this very number of the Bee Journal, urges a uniting of the two existing Bee-Keepers' Unions. Better do it soon, and begin the work so necessary to be done in the interest of every honey-producer of the land.

Exporting Honey.—The Pacific Bee Journal mentions a carload of amber honey shipt to Germany—the second shipment there—and the intended shipment of a number of cases experimentally to Glasgow, Scotland. Likely a good thing for the Californians, and yet it seems a pity to have good honey leave this country at 3½ cents when millions of our inhabitants never taste honey.

New Honey-Dealing Firms here in Chicago are sending out type-written letters something after the Horrie-Wheadon pattern, tho not quite so glaringly crooked. But we advise bee-keepers to be careful, and not be caught in a trap. Some of these firms offer to buy for cash, and ask for prices on honey based upon that consideration. We have made enquiry concerning one firm, and learn that they have no financial standing, having "no capital as yet invested in the partnership."

The Old Union and Dr. Besse.—At the recent Northwestern bee-convention, here in Chicago, the subject of sweet clover came up, and also whether or not either Union should aid a bee-keeper in case the authorities, on the ground of its being a noxious weed, destroyed his sweet clover, or some question to that effect. Dr. Besse was present, and when some one askt whether the National Bee-Keepers' Union was helping him, Dr. Miller thought not; but some one having reported the matter to Manager Newman, who wrote Dr. Miller, the latter sends us the following:

A RETRACTION.

At the late Northwestern convention at Chicago, I said the National Bee-Keepers' Union had done nothing to help Dr. Besse, and to the effect that if the Manager had done anything of that kind it was, so far as I was informed, without consulting the Advisory Board. Dr. Besse corrected me on the spot, as to nothing having been done for him, and Mr. Newman informs me I am in error as to the entire statement. I regret exceedingly having made a statement that might do injustice to Manager Newman, and hasten to say so in a manner more public than that in which the statement was made. As a matter of fact, I learn that Manager Newman has already

paid Dr. Besse $75 in cash, besides giving him points and assisting him in every possible way. C. C. MILLER.

McHenry Co., Ill., Nov. 23, 1897.

Altho we did not express ourselves at the time on the subject—whether or not the old Union was helping Dr. Besse—we were surprised to learn that he had received much aid from that source. But we are glad of it, for we have held all along that he should have such help.

Of course, any one who was present when Dr. Miller, as chairman, said he thought no aid had been given Dr. Besse, knew well enough that he spoke from his honest belief, and intended no injustice to Manager Newman or anybody else. It seems to us, in view of what appeared in these columns the past year bearing on Dr. Besse's case, he should have been quick to acknowledge publicly the full extent of the aid received. Up to the time of the Northwestern convention *we* did not know that he had received any substantial help from the old Union, and had any one askt us the question we would probably have intimated that *we* thought he did not. So we are pleased to learn that so much help has been given him, for we believe it is a just case.

To Colorado Bee-Keepers.—Mr. R. C. Aikin, President of the Colorado State Bee-Keepers' Association, sends us this notice which he desires every Colorado bee-keeper to read, remember, and act upon:

The Colorado State Bee-Keepers' Association will hold their annual convention in the State Capitol building in Denver, Jan. 17, 1898. Let every apiarist in the State who can, be at that meeting. Whether you can be at the meeting or not, write to me just as soon as you read this. First, I want your *name and address* very plainly written. It is very likely that the Association will have something to communicate to you that will be to your and others' interest, so we want your name and address, sure. With the address tell me what topics you want discust at the meeting, or any other business you wish transacted.

Any others—individuals or associations—having business with this Association will please communicate with our State Secretary, Mr. Frank Rauchfuss, Elyria, Colo., or with myself.

Loveland, Colo. R. C. AIKIN,
Pres. Colo. State Bee-Keepers' Association.

The Minnesota Convention of bee-keepers will meet in Minneapolis, at the New Court House, Wednesday and Thursday, Dec. 8 and 9, 1897. The Horticultural Society convenes on Tuesday, Dec. 7, and continues for four days.

Dr. E. R. Jacques, of Crystal, Minn., is the Secretary of the bee-convention, from whom any further information can be obtained, if desired.

There should be a large attendance of bee-keepers at this convention, and if possible take in the horticultural meeting also.

The Weekly Budget.

Mr. G. M. DOOLITTLE, in an article in American Bee-Keeper for November, says swarming will be at its height by the time that page meets the reader's eye. Must be a cog loose somewhere. Can hardly be in Doolittle's head, whose machinery is always so tightly geared.

MR. H. DUPRET, of the Province of Quebec, Canada, when renewing his subscription for 1898, wrote thus:

"I cannot understand how you can give us weekly so much sound bee-literature for so little money. The department, 'Beedom Boiled Down,' I think is a success, and must require a good deal of reading."

"MR. M. H. MENDLESON, of Ventura Co., Calif., has 900 colonies of bees, and his crop of honey this season amounts to about 60 tons."—Pacific Bee Journal.—Whew! but doesn't that almost take one's breath away? 120,000 pounds! Probably a good part of it was bean honey, which C. A. Hatch in the same paper says is white and fine flavored, but inclined to candy quickly.

DR. MILLER, of McHenry Co., Ill., writing us Nov. 24, said:

"Cold. Most of the bees are in the cellar, and Philo is getting the balance in to-day. They had a good flight Saturday, and will be in good condition for winter. I'm hoping they'll remain in good shape."

MR. W. T. RICHARDSON, President of California Bee-Keepers' Exchange, when renewing his subscription to the Bee Journal, and also paying his membership fee to the new Union Nov. 16, wrote:

"I am greatly interested in the object of the United States Bee-Keepers' Union, and want my mite to go for the good of the cause. Your work in bringing forward and showing up humbugs in the honey market, through the Bee Journal, is greatly appreciated by me."

MRS. MATE L. WILLIAMS, of Wadena Co., Minn., when renewing her subscription, wrote thus:

"The honey harvest in this part of Minnesota was abundant, and we call our honey the 'finest in the world,' gathered almost entirely of wild flowers. It is a light golden color, and thick as thickest syrup. If I thought the editor would care to see it, I would send him a sample."

Why, certainly, we are always willing to "sample" the "finest honey in the world," no matter from what part of the world it comes.

MR. EDWARD B. GLADISH, Secretary of the Leahy Mfg. Co., of Missouri, has recently met with very great affliction, in the loss, by accident, of one little daughter and the injury of another child. Our sympathy goes out to Mr. and Mrs. Gladish in their sore bereavement. The Progressive Bee-Keeper tells about the sad accident in this paragraph:

"We had a very sad accident at the factory on the evening of Nov. 3. Three little children (two of Mr. E. B. Gladish's and one of a neighbor) had gone to one of the lumber-sheds to play. No one knew they were there, or they would have been sent home. While passing at some distance, a scream and a falling of lumber attracted attention. It seems they had been trying to climb upon a pile of boards about 4 feet high, and it had fallen over on them, crushing the life out of one, while another had a leg broken, and Clifton Gladish was more or less injured. The one killed was little Florence Gladish, a bright, sweet child, aged 4 years and 1 month."

DR. WM. R. HOWARD, of Texas—the author of the valuable booklet on Foul Brood—we regretted to learn through a letter from him, dated Nov. 16, had met with a heavy loss by fire. He tells us about it in the following:

EDITOR YORK:—On last Aug. 7, I lost my dwelling, laboratory and scientific library by fire, since which time my work has been in the laboratory of the Medical department of the Fort Worth University; but now the College is open and the laboratory there is workt to its utmost in the branch of Medicine, that I have had no time to work. At last I have my laboratory refitted with the best apparatus of precision that is made. I have the largest and most thoroughly equipt private laboratory in the South and West; the building is separate from other buildings, purposely built and arranged—microscopical, chemical and bacteriological—a regularly arranged biological laboratory. I am rebuilding my residence, and hope to be in it by Christmas. We are now temporarily occupying the laboratory building as a residence, until our house is finisht.

I hope for you a prosperous winter, and a doubling of your subscription list. WM. R. HOWARD.

BEEDOM BOILED DOWN.

Honey and Wax of Victoria.—T. L. Chambers estimates from statistics of the custom-house that Victoria—a part of Australia about as large as Minnesota—produces annually 20 tons of wax and 400 tons of honey. A good season, such as 1895, doubles the average. Most of the wax is exported.—Australian Bee-Bulletin.

A Looking-Glass has been for a long time one of the things recommended as a help to get a runaway swarm to settle. Another use has been found for it. The bee-journal of Alsace-Lorraine advises its rays to be thrown into the entrance of a hive somewhat shaded, when at the time of the first spring flight the bees of this hive are slow to come out.

Large Frames.—German bee-keepers are not of one mind as to size of frames. N. P. Kunnen pleads for a large frame, 16x16 inches none too large (70 per cent larger than the Langstroth frame), and doesn't agree with Dzierzon that there is danger of too large colonies. As advantages of large frames are urged: 1. Rapid development of brood in spring. 2. Strong colonies at the advent of harvest. 3. Diminisht danger of chilled brood from sudden cold-spells in spring.—Luxemburgischen Bienen-Zeitung.

Thick vs. Thin Syrup.—L. A. Aspinwall, in Review, strongly advocates the use of thick syrup for feeding. Somnambulist, in Progressive, says he likes the theory of "concentrating the food and thereby the storage of it, by reason of which the colony remains more impact, conserving its vitality," but in practice he can't make it work—bees won't take it. Better compromise, brethren. When you have been so negligent that feeding must be late, give it to them thick; at the same time promising that next time you will feed so early that you can use half water. Then if there is anything in the chemical change made by the bees that some talk about, you will have the advantage of it.

Box-Hives.—It strikes rather strangely on an American ear to hear bee-culture in box-hives, perhaps more strictly in straw hives, defended and practiced in part by some of the ablest bee-keepers in Europe. Especially is it claimed that in some localities movable hives are not the appropriate thing. Lebrecht Wolff says in Centralblatt: "For the average bee-keeper, and for those who cannot devote their entire time to bee-keeping, movable-frame hives are not suited, because too often they tempt to manipulations which turn out to be an injury. With straw hives, the bee-keeper *cannot* go into the hives, so he cannot commit the great mistakes that are the order of the day with movable-comb hives."

Honey-Cost of Wax.—Doolittle says in Progressive—"What Doolittle?" did you say? Among bee-keepers there is only one Doolittle, the unequaled and unapproachable G. M. Now please don't interrupt again. Doolittle says 20 pounds of honey must be fed to receive in return one pound of wax, while the same amount of sugar syrup will give nearly a fourth more wax; but less than 10 pounds of honey will make a pound of wax when the bees have access to the fields in a good honey-flow. This seems to be one of the questions almost impossible of answer, the present views as to the amount of honey for a pound of wax during a honey harvest running all the way from 15 pounds down to nothing.

Honey-Cakes.—Much is made of what the Germans call *lebkuchen*, in the fatherland. They are manufactured in large quantities, keep an indefinite time, and one of the treats the children expect when the *vater* comes home from the fair consists of these same. They are somewhat inappropriately called gingerbread in English, as there is no ginger in them. F. L. Thompson has been getting some recipes, which appear in Review. Here is one of the simplest:

Two pounds of honey is brought to a boil with ½ pint of water, then taken from the fire, and while still warm mixt with 2 pounds of flour. The resulting dough is kneaded well and then set to cool for some time. After some days (the longer the dough stands the better), it is put on a board, and three yolks of eggs, with flour, stirred in, and plump 1¼ ounces bicarbonate of soda added, previously dissolved in water. The whole is then well mixt. Next are added according to taste, 2 pounds sugar, some crusht cinnamon, cloves, citron and chopt almonds; the whole is well workt, rolled out to a finger's thickness and laid on a tin, or put in a mold, and baked in the oven.

Monthly Winter Consumption.—The Bienen-Vater quotes afresh a report given in 1896 of the monthly loss of weight as ascertained at about 30 stations during the winter of 1895-96. Here are the results in pounds, the colony consuming the least being given, the one consuming the most, also the average:

	Least.	Most.	Average.
November	0.00	3.15	1.32
December	0.55	3.94	1.32
January	1.19	7.70	1.98
February	1.59	6.16	3.08
March	1.76	12.13	5.28

From Nov. 1 to April 1, the greatest loss by a single colony was 22.05 pounds, the least, 6.38; the average, 12.32.

Production of Wax.—Abbe Dubois has an interesting article in l'Apiculteur anent the voluntary production of wax. At the head of those who maintain that bees produce wax voluntarily when it is needed, he places Dzierzon, Berlepsch and Sartori. As leading those who believe that wax is produced involuntarily whether needed or not, he places Langstroth, whom he styles "the Dzierzon of America." Abbe Dubois himself takes a middle ground. When bees consume more than they need or use for other purposes, then it is secreted as wax. Generally this results in the production of wax when needed, but not always. When bees swarm, they load up with honey. If the swarm is put on empty combs, the honey is put into the cells and little wax produced. If no combs are present, the bees retain the honey, and wax is secreted. In winter, if bees are excited by disturbance to gorge themselves, scales of wax are produced, altho not used. His general conclusion is that it is a dead loss of wax to give the bees no chance to build comb in time of harvest, but to allow them to build too much is at an expense of honey, not compensated by the wax produced.

Questions and Answers

CONDUCTED BY

DR. C. C. MILLER, MARENGO, ILL.

[Questions may be mailed to the Bee Journal, or to Dr. Miller direct.]

Small Hives for Wintering.

D. N. Ritchey's remark on page 715 made me look back to see what I had said on page 630. There I found I had said, "But you're not going to winter those bees in a 6-frame hive, are you?" At first thought I could not imagine what could have induced me to object to their being wintered in a small hive, for certainly their chances for wintering would not be bettered by putting them into larger hives; but a moment's thought showed that the trouble came from my lack of familiarity with the English language sufficient to make myself clear. What I meant was that a colony that had been kept the season in a hive 8 inches wide, containing 6 frames, would hardly be strong enough to winter successfully. If Mr. Ritchey means that he puts his colonies on 6 frames for wintering, then there is nothing unusual in that; but if he has successfully used hives for four years that are only 8 inches wide and contain only 6 frames, then I'm decidedly interested to know more about it, for from a short acquaintance with Mr. Ritchey I think he knows what he's talking about. If you're using hives that never contain more than 6 frames, Mr. Ritchey, please tell us all about it—how strong colonies get, their yield, whether you have to feed in the fall, and whether you prefer them to hives having 8 or more frames, and if so, why? C. C. M.

Buckwheat and Clover in Mississippi—Feeding Cane Syrup.

1. Will buckwheat do well and yield honey in South Mississippi, 70 miles from the Gulf of Mexico? How about clovers? I think we have the white clover here. Will sweet clover do anything here?

2. Would it do to feed bees on pure ribbon cane syrup that has no chemicals in it? How should it be fed? I'm suffering from my bees visiting two cane-mills to some extent.

3. How many acres of buckwheat should I sow for 50 colonies of bees to work on? and what time should it be sown? MISSISSIPPI.

ANSWERS.—1. As to the plants that flourish in any given place, I'd rather have the opinion of an intelligent planter of experience in that locality than of the most experienced bee-keeper in some other part of the United States. I have an impression that buckwheat does not succeed well in Mississippi, but I may be entirely mistaken. I think I have seen favorable reports of sweet clover in Mississippi.

2. Such syrup might be safely fed in spring when bees are flying every day; but it should not be fed at any time when it would go into surplus honey, nor in fall for winter stores. It may be fed in any way that liquid food is given to bees, either in the hive or in the open air.

3. It is a very difficult thing for any one to give an exact answer as to the amount of honey to be obtained from a given plant on a given area. M. Quinby, who in his day did so much for bee-keeping, said an acre of buckwheat would yield 25 pounds of honey in a day. If that be correct, 50 colonies of bees might take care of 10 or more acres.

A Beginner's Experience—Clipping Queens.

I have 5 colonies—4 Italian and 1 black. I began in August with about a teacup of black bees and gave, all told, two frames of brood from my Italians. The first week in September the queen and drones hatcht. I now have a very fair colony of bees, but will have to feed them some. The first week in September I hived a runaway swarm of black bees; there were less than a quart of them. I gave them one frame of brood and some empty combs. They had a black queen and I have not tried to rear an Italian for them. I have them now strong enough to go through the winter by feeding.

This is my first year with bees, and I have had neither papers nor books on the subject, yet I have reared both queens and drones out of season.

My bees are in the orchard over 100 feet from the house. Would you advise me to clip the queen's wings to prevent the swarms leaving or clustering high next spring, or not? If so, had I better clip them now, or wait till they begin to fly in the spring? I never saw any one clip a queen's wings, how is it done? TEXAS, Nov. 7.

ANSWER.—You will probably find it an advantage to have your queens clipt. If you are not on hand to see the swarm issue, sometimes a clipt queen will be lost, but it is better to lose a queen than to lose both bees and queen.

Better wait till spring. Not so many bees are then in the way of finding the queen, and there is no advantage in having them clipt sooner.

A queen has four wings, a large and a small one on each side. It will be sufficient to cut off two-thirds of the large wing on one side. It is better to cut on one side only, for a queen can make a better stagger at flying with both sides alike then when only one side is cut. On account of seeing at a glance whether a queen is clipt or not, it is better to cut off both wings on one side. G. M. Doolittle uses a small blade of a pocket-knife, very sharp, holding the wing with the left hand over the hive, letting it drop on the frames as the wing is cut with the right hand. It seems easier to me, perhaps because I'm accustomed to it, to use a pair of scissors, and perhaps this is the practice of most clippers. Get the queen between the thumb and finger of the left hand, her head facing toward the the left, and with a pair of lace scissors, or any scissors that are rather small toward the points, cut off one or both wings on one side.

Having no experience in clipping, you might find it of advantage to get the Monette queen-clipping device, which is spoken of in the highest terms by some who have used it. You can can get it from the office of the American Bee Journal for 30 cents, or you can get it free by sending in a new subscriber.

Building an Adobe Bee-House.

I have 11 colonies of Italian bees, and am a novice and wish to fix for extracting as I think it will be easier for me as I am working out by the month. How shall I go to work? I could make an adobe house of any size necessary, walls to be 12 inches thick, or more, and keep the implements etc., in it, and go at proper intervals to extract. If I do not get them in a house the natives will steal both bees and honey. NEW MEXICO.

ANSWERS.—If I understand you correctly, you want to make a house in which you can fasten your bees. Adobe being cheap and lumber high, I think I should try the adobe. As you say your heavy winds come from the southwest, it might be well to make a building to run from southwest to northeast, with a door at the northeast end. The width of the building depends somewhat on the size of the hives. Make it wide enough to take a row of hives on each side with room for you to pass between the two rows. One row would have its entrances to the northwest, the other to the southeast. The length, of course, would depend on the number of hives you expect it to contain. In front of each hive should be left in the wall a porthole perhaps 4 inches wide and 2 inches deep. Then in some way you must close all between the port-hole and the entrance to the hives so that no bees can get out into the house. Your diagram seems to inquire whether you should build a square or a circular wall, but you will see that for the sake of economy in room the entrances are to be on two opposite sides, taking two rows of bees, so your building will rather be long or oval.

General Items.

Poor Season for Bees.

Bees have done poorly all summer here. Very few colonies stored any surplus honey, altho the hives have been full of bees. MARY E. DEWEY.

Manatee Co., Fla., Nov. 15.

Honey-Year a Poor One.

I have 120 colonies of bees wintering. I could not do without the Bee Journal. We had a poor honey-year in this locality, FRANK BLANCHARD.

Chenango Co., N. Y., Nov. 22.

Too Much Bulk Honey Produced.

There is too much bulk honey produced here. My bees are packt for winter on the summer stands—115 in chaff hives, on the same plan as for 12 years past. We have had no rain of any consequence since July 5. JOHN C. STEWART.

Nodaway Co., Mo., Nov. 19.

Bees Did Well.

I had 20 colonies, spring count, and run for comb honey nearly altogether the past season. One colony I had on four supers of 28 sections each, all well filled and capt, and the balance two supers each. I sell all my honey at home by the super, at $4.00 each, to the grocer. Honey was a failure in this neighborhood the past season. I think my success lies in the old American Bee Journal; it gives everything in season. I get it regularly. Long may it live. W. J. STEVENSON.

Ontario, Canada, Nov. 17.

Sweet Clover—Putting Bees In.

The Busy Bee is doing lots of good by republishing so many articles on the sweet clover topic. They are now in convenient shape to refer to readily.

I expected to have moved my bees (31 colonies) into winter quarters (house-cellar) before this date, but I shall leave them out-doors as long as such nice weather as we now have continues. My practice for several years past is to cellar my bees as late as possible, and then to put them out for good as early as possible after March 1. I don't want my bees to remain in-doors until the trees begin to bloom, as many do. M. M. BALDRIDGE.

Kane Co., Ill., Nov. 19.

Report for Several Years.

In 1895 I purchast a colony and increast it to two, but got no surplus, because I knew nothing of their management. The next season I increast the two colonies to seven, and secured 80 pounds of surplus honey. This season I started with six colonies and a 3-frame nucleus, and secured 700 pounds of surplus honey, mostly comb, and increast to 14 colonies. From one colony I secured 175 pounds of extracted honey, it being the only colony that did not swarm.

So you see the amount of surplus increast as my knowledge of the manage-

ment of the honey-bee increast. I hope it may continue. I say the amount increast as my knowledge, judging from the amount of honey obtained by the bee-keepers in this vicinity in the last two seasons, which was more than this season. The honey-plants found here are white clover, linden, willow-herb, golden-rod and buckwheat; the last named of course being sown by the farmers. IRA D. BARTLETT.

Charlevoix Co., Mich., Nov. 15.

Bees Did Well.

Bees have done well here this year. I read the American Bee Journal every week, and get a heap of information out of it. J. C. GAMBRILL.

Lamar Co., Tex., Nov. 15.

Not a Good Season.

The past season did not prove very good here—too much rain in May and June. I had to feed half of my colonies (20). I got no swarms, but some 700 pounds of honey. The apiary is in an orchard within the city limits. Attending to the bees is a very agreeable pastime in our college work.

H. DUFRET.

Prov. of Quebec, Canada, Nov. 23.

The Michigan No-Wall Foundation.

I am very glad the "Question-Box" took up the Michigan no-wall foundation. It is very agreeable to know the pros and cons of belief. The present, as also the past, places great stress on belief.

When the Michigan convention meets about Jan. 1, 1898, a comparison will be made, and facts, not beliefs, brought forward. As there are no money considerations to figure in the report—only prejudice and habit will bias the bee-keeper's judgment—it will be fair to expect a reasonable expression.

Clare Co., Mich., T. F. BINGHAM.

Very Good Bee-Season.

The bee-season with me has been very good. I have a fine lot of honey, and 65 colonies of bees. I winter them on the summer stands, packt in leaves in cases, with a shingle roof. I have good results wintering in this way. I wintered about 45 colonies last winter with no loss, but they had abundant stores of good honey, and the storm-doors were up in bad weather. It was also a favorable winter. Nearly all my honey is white clover, and the best I ever saw.

I notice a man reports in the Bee Journal that he took off 3,500 pounds of honey, and yet he had no bees at all. I can't do that trick.

C. W. LEARNED.

Wayne Co., Mich., Nov. 23.

Bee-Keepers' Photograph.—We have now on hand a limited number of excellent photographs of prominent bee-keepers—a number of pictures on one card. The likeness of 49 of them are shown on one of the photographs, and 121 on the other. We will send them, postpaid, for 30 cts. a card, mailing from the 121 kind first; then after they are all gone, we will send the 49 kind. So those who order first will get the most "faces" for their money. Send orders to the Bee Journal office.

HONEY and BEESWAX

MARKET QUOTATIONS.

Chicago, Ill., Nov. 8.—Fancy white 11 to 12c. No. 1, 10c.; fancy amber, 8 to 9c.; No. 1, 7.; fancy dark, 7 to 8c.; No 1 and mixed, 7c. Extracted, white, 5 to 6c.; amber, 4½ to 5c.; dark, 3½ to 4c. Beeswax, 26 to 27c.

All of these grades vary in quality and style of package, which makes it difficult to tell just what a certain colored honey will bring without knowing flavor and body thereof. Sales are of small amounts, and supply abundant. Beeswax is wanted at price quoted.

San Francisco, Calif., Oct. 27.—White comb, 1-lbs., 7½ to 9½c.; amber, 4 to 6c. Extracted, white, 4¼ to 4¾c.; light amber, 3½ to 3¾c.; dark tule, 1¾ to 2¼c. Beeswax, fair to choice, 22 to 24c.

There is a tolerably firm market for choice to select water white, both comb and extracted, with not much of the same offering. In a small way on local account higher rates than are quotable are realized. Dark grades fail to receive any special attention, despite the fact that such are obtainable at low figures. There is no lack of demand for beeswax, and not much offering. At the same time, wholesale buyers refuse to operate at any advance on previous rates.

Philadelphia, Pa., Nov. 13.—Fancy white, 13 to 14c.; No. 1, 12c.; fancy amber, 10c.; No. 1, 9c.; No. 1 dark, 8c. Extracted, white, 5 to 5½c.; amber, 5c.; dark, 4 to 4½c. Beeswax, 27c.

Honey is arriving very freely; market is a little off. Beeswax is in good demand.

Buffalo, N. Y., Nov. 19.—Trade is more quiet, and only the fanciest is moving satisfactorily at 10 to 11c.; other grades require pushing and cutting to move much, at from 9 to 6c., as to actual grade. Supplies are not large. Fancy can be easily placed. Extracted moves fairly well at 6 1-2 to 4c., as to color, etc.

Albany, N. Y., Nov. 8.—Fancy white, 13c.; No. 1, 12 to 12½c.; fancy amber, 9 to 10c.; No. 1, 8 to 9c; fancy dark, 8 to 8½c.; No. 1, 7½ to 8c. Extracted, white, 5 to 6c.; amber, 4½ to 5c.; dark, 4 to 4½c.

Our honey market is active and stock moving off rapidly at quotations. Fancy white comb is scarce.

St. Louis, Mo., Nov. 8.—Fancy white, 11 to 12c.; amber, 9 to 10c.; dark, 7 to 8c. Extracted, white, 5½ to 6c.; light amber, 4½ to 5c.; amber, 4 to 4½c. Beeswax, prime, 24 to 24½c.

Remand is rather light for this season of the year.

Boston, Mass., Nov 8.—Fancy white, in cartons, 13c.; No. 1, 11 to 12c.; fancy amber, 10c. Extracted, white, 6 to 7c.; amber, 5 to 5½c. Beeswax, 28c.

No. 1 and fancy honey has sold well during the past 10 days, but off grades and light weight is going slowly. Beeswax is in good demand and but little here.

Kansas City, Mo., Nov. 8.—Fancy white, 11 to 12c.; No. 1, 10 to 11c.; fancy amber, 10c. No. 1 9 to 10c.; fancy dark, 9c.; No. 1, 8. Extracted, white, 5½ to 6c.; amber, 5 to 5½c.; dark, 4 to 4½c. Beeswax, 22 to 25c.

Receipts of comb honey are large; extracted is light.

Minneapolis, Minn., Nov. 8.—Fancy white, 10½ to 12c.; No 1, 9 to 10c.; fancy amber, 9 to 10c.; No. 1, 9c. Extracted, white, 5 to 6c.; amber, 4 to 5c.

Demand is good, prices are firm, and supply only moderate—best time so far this season to ship.

New York, N. Y., Nov. 8.—Fancy white, 12c.; No. 1, 10 to 11c.; fancy amber, 9 to 9½c.; No. 1, 9c.; fancy dark, 8½c.; No. 1, 8c. Extracted, white, 5 to 5½c.; amber, 4½ to 5c.; dark, 4c. Beeswax, 26 to 27c.

Our market does not show much activity and comb honey is moving off rather slowly. The receipts are large and the stock is accumulating. While choice grades of white are likely to find sale at present quotations, prices on off grades and buckwheat will have to be shaded in round lots. Southern in barrels is in good demand at 50c. a gallon, for average grade.

Detroit, Mich., Nov. 9.—Fancy white, 11 to 12c.; No. 1, 10 to 11c.; fancy amber, 9 to 10c.; No. 1, 8 to 9c.; fancy dark, 7 to 8c. Extracted, white, 5 to 6c.; amber, 4 to 5c. Beeswax, 25 to 26c.

Cleveland, Ohio, Nov. 9.—Fancy white, 12 to 13c.; No. 1, 11 to 12c.; fancy amber, 9 to 10c.; No. 1, 8 to 9c.; fancy dark, 7 to 8c. Extracted, white, 6½c.; amber, 5½ to 6c. Beeswax, 28c.

Milwaukee, Wis., Nov. 8.—Fancy white, 12 to 13c.; No. 1, 11 to 12c.; fancy amber, 9 to 10c.; No. 1, 8 to 9c. Extracted, white, 5½ to 6c.; amber, 4½ to 5½c.; dark, 4 to 4½c. Beeswax, 25 to 27c.

The market is in good condition. Receipts are liberal, demand fair, and values fairly sustained on finest grades of honey, both comb and extracted. We are looking for an increased consumption of honey this season, as the cost is not high, and is an unequalled substitute for butter to any or all who cannot afford to buy the best butter.

Indianapolis, Ind., Nov. 8.—Fancy white, 11 to 13c.; No 1, 9 to 10c.; fancy amber, 9 to 10c. Extracted, white, 5 to 6c. Beeswax, 25c.

Demand for fancy white comb honey and fancy white extracted is exceptionally good, while there is almost no demand for dark or amber comb or extracted honey.

Cincinnati, Ohio, Nov. 6.—Fancy white, 11 to 13c.; No. 1, 10 to 12c.; No. 1 amber, 8 to 10c.; No. 1 dark, 7 to 8c. Extracted, white, 5 to 6c.; amber, 4to 5c.; dark, 3½ to 4c. Beeswax, 22 to 25c.

Demand is slow for extracted and comb honey, with a good supply, while beeswax is in good demand, with a fair supply.

List of Honey and Beeswax Dealers.

Most of whom Quote in this Journal.

Chicago, Ills.

R. A. BURNETT & Co., 163 South Water Street.

New York, N. Y.

HILDRETH BROS. & SEGELKEN, 120 & 122 W. Broadway.

Kansas City, Mo.

C. C. CLEMONS & Co., 423 Walnut St.

Buffalo, N. Y.

BATTERSON & Co., 167 & 169 Scott St.

Hamilton, Ills.

CHAS. DADANT & SON.

Cleveland, Ohio.

A. B. WILLIAMS & Co., 80 & 82 Broadway.

Philadelphia, Pa.

WM. A. SELSER, 10 Vine St.
Mr. Selser handles no honey on commission

St. Louis, Mo.

WESTCOTT COM. Co., 213 Market St

Minneapolis, Minn.

S. H. HALL & Co.

Milwaukee, Wis.

A. V. BISHOP & Co.

Boston, Mass.

BLAKE, SCOTT & LEE., 57 Chatham Street.

Detroit, Mich.

M. H. HUNT, Bell Branch, Wayne Co., Mich.

Indianapolis, Ind.

WALTER S. POUDER, 162 Massachusetts Ave.

Albany, N. Y.

CHAS. McCULLOCH & Co., 380 Broadway.

Cincinnati, Ohio.

C. F. MUTH & SON, cor. Freeman & Central Avs.